

Diversity of food of the Grey Parrot *Psittacus erithacus* in Korup National Park, Cameroon

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Des données concernant la nourriture du Perroquet gris *Psittacus erithacus* ont été collectées dans le Parc National de Korup et ses environs, le long de transects dans des formations forestières primaire et secondaire. L'étude a établi que le perroquet mange les bourgeons, fleurs, fruits et graines de 14 espèces d'arbres appartenant à 13 familles différentes. La végétation secondaire était plus riche en nourriture que la forêt primaire. Chaque mois de l'année le Perroquet gris dispose d'au moins trois sources d'aliments, 64% des aliments atteignant leur maturité au cours de la saison sèche et 36% en saison des pluies. Pour survivre à l'état sauvage, l'espèce a besoin d'aliments divers. Sa capacité de diversifier ses sources de nourriture en fonction des saisons et des habitats a contribué à son succès dans l'écosystème de la forêt dense de Korup. Les résultats de l'étude permettront de diversifier le régime alimentaire des Perroquets gris en captivité et de mieux comprendre le rôle de l'espèce dans la chaîne alimentaire de Korup.

Food items differ in nutritive value and availability. In the wild, foods occur patchily⁷, and a productive habitat may have many (or fewer) patches with greater food production. Most African parrots feed predominantly on plant materials, mainly fruits and/or seeds⁵, although a few are partially reliant on insects⁷. While, for instance, Puerto Rican Parrot *Amazona vittata* is known to feed on c60 plant species in Luquillo Forest⁹, little is documented concerning the diversity of foods taken by the Grey Parrot *Psittacus erithacus* in the wild^{3,6}. Detailed knowledge of the diversity of foods taken by the Grey Parrot is of utmost importance for restoring its degraded habitats in West and Central Africa¹⁰. The present study aims to contribute to our understanding of the ecological role of the parrot in the Korup forest ecosystem, and predictions of the likelihood of its presence or absence in the food chain in this area.

Study area

Korup rainforest in south-west Cameroon comprises Korup National Park and its Support Zone (KNP). The park extends from 04°54'N to 05°28'N and 08°42'E to 09°16'E, and covers an area of c125,000 ha. It lies in the evergreen forest zone of wet coastal West Africa, being classified as lowland rainforest of the Guinea-Congo type⁸. Our study was undertaken in the southern part of KNP; comparative data were collected in two sample plots defined as follows:

Park Sample Plot is bounded to the south by Pamol Plantation, an agro-industrial oil palm estate. It is dominated by primary vegetation; the indicator tree species include: *Enantia chloranta*, *Azelia bipindensis*, *Strombosiopsis tetrandra*, *Obanguia alata*, *Xylopia aethiopica* and *Anthonotha fragan*.

Support Zone Sample Plot is located in the support zone of KNP and comprises heterogeneous and secondary vegetation, the result of diverse socio-economic activities. It consists of human settlements, farms, fallowed farms, hunting and lumbering sites, service roads, and small-scale plantations of cocoa, coffee and oil palms. The habitat is patchy as the result of land exploitation, and secondary forest indicator species include *Ceiba pentandra*, *Musanga cecropioides*, *Pycnanthus angolensis*, *Terminalia superba* and *T. ivorensis*.

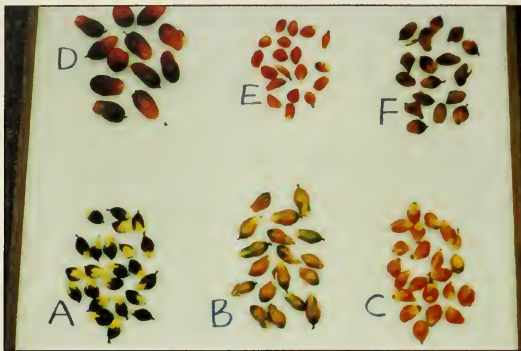
Materials and methods

Each sample plot has an area of c4,500 ha. Line transects (mean length 6 km) were randomly established in these to monitor parrot activity. Data were collected by direct observation of parrots feeding. This involved walking transects and searching areas of fruiting trees where birds might be feeding², their presence being indicated by the species' usual noisy behaviour at feeding sites. When a feeding parrot was located, information was recorded, and food remains and whole food items were collected for further examination and identification by a plant taxonomist. Data were collected during 1994 to 1996.

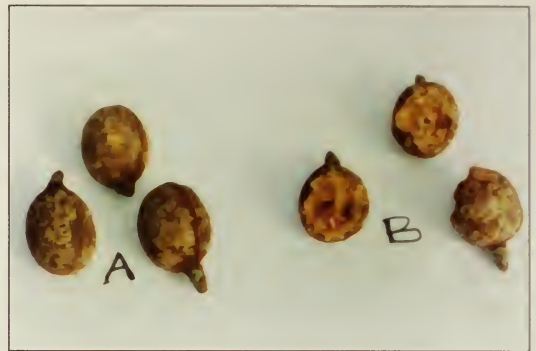
Results

Food diversity

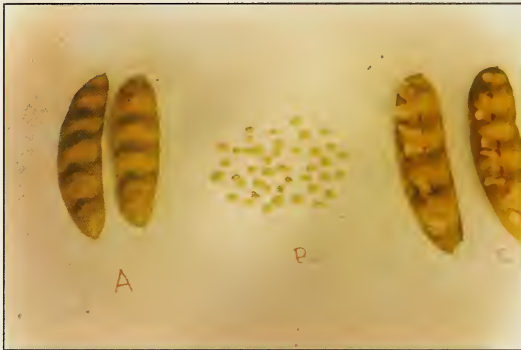
Several food types, belonging to 13 families and 14 tree species, were taken by Grey Parrot in the study area. Two food types were of the family Caesalpinaceae, another two of the family Burseraceae, and the other families were each represented by one tree species (Table 1). The birds were observed feeding on buds, flowers, fruits and seeds. In all, three flower sources (20%), four seed sources (26.7%) and seven fruit sources (53.3%) were identified. Information



1



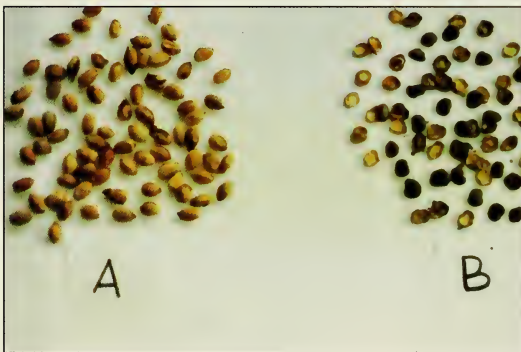
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Figures 1–5. Foods of the Grey Parrot *Psittacus erithacus* (S.A. Tamungang)

1. *Elaeis guineensis* varieties at different stages of ripening (most preferred is D, while leftovers of the fruit after being eaten are depicted in F)
2. *Pycnanthus angolensis* young fruits (A = whole fruits and B = leftovers after the parrots have extracted the soft seeds)
3. *Albizia gummifera* (A = whole fruits, B = seeds eaten by Grey Parrot and C = method of seed extraction by Grey Parrot)
4. *Blighia welwitschii* (Grey Parrot feeds on the fawn aril attached to the seeds)
5. *Dialium guineense* (A = seeds eaten by Grey Parrot and B = leftover seed shells)

was also obtained from secondary sources of six types of food taken by the Grey Parrot (Table 2).

Food distribution in sample plots

Ten food sources (74.3%) were found in the Support Zone sample plot. Four food sources (25.7%) were present in both plots (Table 1). The Support Zone appears to be richer in food resources than the park itself.

Monthly and seasonal distribution of food sources

Food types were further classified by the month in which the part consumed by the parrot matured. There were at least three mature food types each month (Table 3), fewest in August, then June and September. March had the highest number of food sources (eight). There are two major seasons in the study area, the wet (April–October) and dry seasons (November–March). Based on seasonality, the wet season had 35.9% and the dry season 64.1% of food sources.

Discussion

Grey Parrot takes a variety of foods in Korup, including over 14 species of trees and exploiting various plant parts. In Ghana, Dandliker⁴ recorded the species feeding on nine tree species. It is known to feed on fruits and seeds in the wild⁶ but we found that flowers represented 20% of its food. The parrot also feeds on buds⁴. A study in Lobéké,

Table 1. Food species of the Grey Parrot *Psittacus erithacus* in Korup National Park, Cameroon, during 1994 to 1996.

Tree species	Family	Part consumed	Dominant sample plot
<i>Alstonia boonei</i>	Apocynaceae	Fruit	Support Zone
<i>Macaranga spinosa</i>	Euphobiaceae	Fruit	Support Zone
<i>Daniellia ogea</i>	Caesalpinaceae	Flower	Support Zone / Park
<i>Dialium guineense</i>	Caesalpinaceae	Seed	Support Zone
<i>Albizia gummifera</i>	Mimosaceae	Seed	Support Zone
<i>Dacryodes edulis</i>	Burseraceae	Fruit	Support Zone
<i>Dacryodes microphylla</i>	Burseraceae	Fruit	Support Zone
<i>Elaeis guineensis</i>	Palmae	Fruit	Support Zone
<i>Pycnanthus angolensis</i>	Myristicaceae	Fruit	Support Zone
<i>Blighia welwitschii</i>	Sapindaceae	Fruit	Support Zone / Park
<i>Spathodea campanulata</i>	Bignoniaceae	Flower	Support Zone
<i>Ceiba pentandra</i>	Bombacaceae	Seed / Flower bud	Support Zone
<i>Symphonia globulifera</i>	Guttiferae	Flower	Support Zone / Park
<i>Treculia africana</i>	Moraceae	Seed	Support Zone/Park

south-east Cameroon, revealed that the Grey Parrot consumes weeds, herbs and soil¹.

The availability of several food sources each month may ensure a balanced diet of nutrients for the parrot. Seasonal diet shifts, caused by the absence of preferred food types, were noted. For example, during seasons with poor plum yield, the parrots consume more *Macaranga spinosa* and *Elaeis guineensis*. Some tree species fruit longer than others in the same habitat, eg *Symphonia globulifera* produces flowers over seven months of the year. Varied fruiting phenologies provide different fruits year-round. Food availability changes seasonally, according to phenology and renewal rate¹¹.

Oil palm fruits are available to the parrots year-round and the Pamol plantation is important in this respect. Fruit are the most frequently taken foods of the species⁶. 'Crunch periods' or critical seasons for food may result from reduced

diversity and not scarcity. The ability of the species to diversify its food resources seasonally has contributed to its varied feeding behaviour in Korup.

Socio-economic activities at KNP have resulted in the growth of secondary vegetation that has enhanced the

Table 2. Unconfirmed food species of the Grey Parrot *Psittacus erithacus* in Korup National Park, Cameroon.

Tree species	Family	Part consumed
<i>Azfelia africana</i>	Caesalpinioideae	Bud
<i>Strephonema pseudocola</i>	Combretaceae	Seed
<i>Sterculia tragacantha</i>	Sterculiaceae	Seed
<i>Strychnos spinosa</i>	Loganiaceae	Seed
<i>Eriobroma oblongum</i>	Sterculiaceae	Seed
<i>Terminalia glaucescens</i>	Combretaceae	Seed

Table 3. Monthly presence of foods of the Grey Parrot *Psittacus erithacus* in Korup National Park, Cameroon.

Tree species	Monthly food presence											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Alstonia boonei</i>	*	*	*	*	*							
<i>Macaranga spinosa</i>						*	*					
<i>Daniellia ogea</i>				*	*							
<i>Dalium guineense</i>										*	*	*
<i>Albizia gummifera</i>									*	*	*	*
<i>Dacryodes edulis</i>									*	*		
<i>Dacryodes microphylla</i>						*	*	*	*			
<i>Elaeis guineensis</i>	*	*	*	*	*	*	*	*	*	*	*	*
<i>Pycnanthus angolensis</i>	*	*	*	*								
<i>Blighia welwitschii</i>		*	*	*								
<i>Spathodea campanulata</i>									*	*	*	*
<i>Ceiba pentandra</i>	*	*	*								*	*
<i>Symphonia globulifera</i>	*	*	*	*	*	*	*					
<i>Treculia africana</i>		*	*									
Total number of food sources	5	7	8	6	5	4	5	3	4	5	5	5

availability of food sources for the parrot. Food availability is also related to the phenological processes of the plants comprising the vegetation communities; most of the plants shed their leaves in the early dry season. Some, eg *Ceiba pentandra*, produce flowers and buds when the leaves are shed. The parrot feeds on the buds and subsequently on the seeds, ensuring maximum exploitation of the fruiting tree.

Conclusion

Fourteen tree species belonging to 12 families were identified as food sources of the Grey Parrot in KNP. Foods consist of buds, flowers, fruits and seeds but only the oil palm fruit is available all year. Food resources of the parrot are patchily distributed, and despite the species' broad dietary preferences, availability can determine its diet at certain periods of the year. Grey Parrot requires a diversity of foods in KNP. The Support Zone is richer in food resources than the park itself, but this hinders the species' conservation because it is difficult to control parrot exploitation outside the park. Our findings should be used to improve the food-degraded habitats of the parrot, check nutrient deficiencies of the species' diet in captivity, and develop an understanding of the role of the Grey Parrot in the food chain dynamics within KNP.

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